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ABSTRACT

The Texas Association of School Administrators (TASA) with technical support from the South Central Regional Technology in Education Consortia-Texas (SCR*TEC-TX) conducted a survey of the technology infrastructure in all public schools in Texas. This document provides the final report of the 1998 Texas Public School Technology Survey. Following background information, data summaries are provided which address the following four research questions: (1) What changes have occurred in Texas school districts between 1996 and 1998 with respect to technology infrastructure financial support, staff development related to technology, current technology infrastructure, and use of technology infrastructure? (2) What type of professional development on technology is being provided across the Educational Service Centers (ESC) regions for teachers and technology coordinators? (3) What is the current status of telecommunications connectivity to school districts by ESC Region? and (4) How is technology being used in school districts (classified by type and size) by teachers and students? The report concludes that substantial technology infrastructure changes have occurred in Texas public schools over the past three years, and the extent and breadth of these changes speaks volumes about how state and federal funding are impacting schools. The survey instrument is appended. (AEF)

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Final Report of the 1998 Texas Public School Technology Survey

Prepared
for

The Center for the Study and Implementation of Collaborative Learning Communities

By

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March 29, 1999

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1998 Texas Public School Technology Survey prepared for the Center for the Study and Implementation of Collaborative Learning Communities

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In 1989, former President Bush stated that, as one of the national goals, "the United States would be first in the world in math and science." Little did we realize at that time how this would prove to be quite a challenge as the nation was just gearing up to face the challenges and opportunities put forth by the exploding technology revolution coupled with disappointing science test scores. Many different approaches have been suggested for improving public education in this country. A common element in many of these approaches has been the emphasis on technology. Reform literature often cites the need for more extensive and more effective computer and telecommunication network instructional applications. The motivation underlying these calls for reform potentially was linked to the observation that technology has fundamentally transformed corporate America, yet technology's impact in our nation's classrooms has usually been very modest. In 1994, *Goals 2000: Educate America Act* became law. This act contained a number of provisions designed to foster instructional applications of technology in classrooms across the nation (President's Committee of Advisors on Science and Technology, 1997). The technology infrastructure and staff development to use the technology for classroom applications have become important sources of benchmarks to mark progress with the integration of technology into our classrooms.

Technology Infrastructure: Four years ago, the 74th Texas State Legislature passed three acts (House Bill 2128, Senate Bill 1, House Bill 85) that have affected the development of technology and education in Texas. Significant efforts to build technology infrastructure in Texas is evident through the 629 non-competitive grant opportunities provided by the Telecommunications Infrastructure Fund (TIF) Board; the 316 ISDs funded by competitive TIF grants; the 38 competitive Technology In Education (TIE) grants or Technology Literacy Challenge Fund administered by the Texas Education Agency; and the 600+ applications from school districts for E-Rate discounts in FY98. Given this intensive effort, it is time to consider how to use resources to put support systems in place and for teacher training activities on these technologies that are appearing in the schools and classrooms.

Staff Development: With schools becoming connected and educators increasingly attending staff development activities where they are learning to integrate multimedia into their classroom instruction, much momentum will be lost if the content to be integrated is not available for classroom applications. No where is change needed more than in staff development in technology. Few states invest adequately in either pre-service or in-service technology professional development for educators. As a result, most teachers have little direct experience in observing and learning about the wide range of computer-telecommunications applications for classrooms. An Education

Commission of the States document (ECS, 1998) states that only 15 percent of the K-12 teachers in the nation have received as much as 9 hours of training in technology. Further, this report notes that the average school district expenditures for technology devoted to teacher training is reported to be 6% while the recommended level is 30%.

Literature on technology staff development indicates that best practice takes place in the school when teachers experience the need to change their classroom practices. Optimal professional development opportunities also center around specific projects and take into account the varied levels of experience of educators with technology and occur across an extended period of time (Clark & Denton, 1998).

Context

In 1996, the Texas Association of School Administrators (TASA) with technical support from the South Central Regional Technology in Education Consortia-Texas (SCR*TEC-TX) conducted a survey of the technology infrastructure in all public schools in Texas. Over (82)% or (856) of the 1,043 school districts in Texas participated in that survey effort. Findings from that effort included:

- Over half (57%) of the school districts reported having 2-6 computers (386Mhz or above) per classroom;
- Twenty percent of the reporting districts reported no staff development on technology was provided in their schools;
- Over one-third of the school districts reported on-going technical assistance being available in their schools;
- Over 80% of the responding districts planned to spend 10 cents of each dollar budgeted for technology on staff development activities over the following three years;
- Nearly half of the responding school districts indicated that the district's technology plan was revised annually;
- Eighty-seven percent of the respondents reported technology hardware expenditures ranged from 0 to 2 cents per dollar of the district budget.

The results of the 1996 TASA Technology Survey are available at www.coe.tamu.edu/~texas. This novel site provides an electronic file and associated software, *Web Survey Builder* that enable the data to be partitioned and analyzed with respect to different geographic and school size classifications enabling customized reports for each reader. Anecdotal evidence indicates this site has been frequently accessed and used in developing proposals for technology support by schools across the state. Further, this effort was referenced in a Telecommunications Infrastructure Fund Board Report (1997) as a source of information that was used in determining how funds were to be initially distributed to school districts across the state. With the recognition of the service SCR*TEC-TX provided to school districts and state agencies with the 1996 Technology Infrastructure Survey, a decision was readily made to undertake another technology survey. It is hoped this effort conducted preceding the 76th Texas Legislative session, has provided valued information to schools and legislators regarding technology integration into the public schools of Texas.

Method

Instrument Development: On February 13, 1998, a decision was made to proceed with a 1998 SCR*TEC-TX and TASA technology infrastructure survey. An initial draft of the survey instrument was developed based on the 1996 instrument and critiqued at a meeting held on March 13, 1998 at TASA headquarters in Austin. Participants at this meeting included representatives from the Texas Education Agency; Region 12 Educational Service Center; Southwestern Bell; TASA; T.H.E. Journal; and SCR*TEC-TX staff. The instrument subsequently underwent several revisions that incorporated suggestions from Telecommunications Infrastructure Fund staff, legislative staff and TEA officials resulting in the final version that contains 37 items clustered under five headings: policy (5 items); district's technology support (5 items); district's current technology infrastructure (10 items); use of technology (10 items); staff development related to technology (7 items). Although the distribution of the survey was targeted to the superintendent of schools, directions at the beginning of the instrument encouraged the superintendent to direct the instrument to the district's technology director for completion and remittance.

The items were then integrated with the *Web Survey Builder*, enabling the **SCR*TEC-TX and TASA Levels and Use of Technology in Texas Public Schools 1998 Survey** to be conducted and instantaneously analyzed over the Internet. A mark-sense or optical scan paper version was developed by National Computer Systems (NCS) for distribution to each school district in Texas. Approval of the data collection process by the TAMU Institutional Review Board for Human Subjects in Research was attained on 5/27/98. See Appendix A for copies of the mark sense and electronic versions of the survey instrument.

Data Collection

Data collection began with the initial survey mail-out occurring on August 11, 1998 to all 1043 school districts in Texas. An initial mail-out packet consisting of a personalized cover letter from the Executive Director of TASA to the superintendent, a distinctive information sheet on accessing the electronic version of the survey instrument, a mark sense survey instrument and return mailer were provided to the U.S. Postal Service for first class delivery. During the following eight weeks 468 completed surveys were submitted representing a 44.9% return.

A second mail-out consisting of a personalized reminder cover letter from the Executive Director of TASA to the superintendent, a mark sense survey instrument, return mailer, and a descriptive statistical summary of the initial 450 responses for each survey item was mailed with first-class service to non-responding school districts on October 12, 1998. Five weeks later, 663 completed surveys had been submitted.

A reminder from TASA to nineteen non-participating districts on November 30, 1998 and reminder telephone calls to the remaining non-participating districts began November 30, 1998 by SCR*TEC-TX staff. Offers to send a third instrument (137 districts mailed another copy) as well as encouragement to submit survey information electronically (website addresses provided to 99 districts) and 16 instruments were faxed to districts as a result of these reminders. On Tuesday, January 5, 1999 the closing date for receipt of surveys, slightly less than four months after the data collection began, 789 completed surveys had been submitted.

Because two response options (electronic and mark sense) to the survey were provided to respondents, the type of return was recorded as completed surveys were received. The following grid provides a summary of the electronic and mailed surveys.

1998 Texas Public School (TASA) Survey Log

First Mail-Out

Date	Print Surveys	Electronic Surveys	Daily Total	Cumulative Total
8/21/98	29	74	103	103
8/24/98	38	21	59	162
8/25/98	23	3	26	188
8/26/98	27	11	38	226
8/27/98	6	8	14	240
8/28/98	17	4	21	261
8/31/98	22	4	26	287
9/1/98	0	2	2	289
9/2/98	19	6	25	314
9/3/98	0	5	5	319
9/4/98	5	3	8	327
9/7/98	0	4	4	331
9/10/98	25	6	31	362
9/11/98	17	0	17	379
9/14/98	7	7	14	393
9/15/98	0	2	2	395
9/16/98	8	0	8	403
9/17/98	11	6	17	420
9/18/98	7	0	7	427
9/21/98	11	0	11	438
9/22/98	0	1	1	439
9/25/98	8	0	8	447
9/28/98	1	7	8	455
9/29/98	1	0	1	456
9/30/98	2	0	2	458
10/5/98	3	0	3	461
10/6/98	1	0	1	462
10/7/98	1	3	4	466
10/8/98	2	0	2	468

Second Mail-Out

Date	Print Surveys	Electronic Surveys	Daily Total	Cumulative Total
10/12/98	1	0	1	469
10/16/98	1	0	1	470
10/19/98	5	10	15	485
10/20/98	12	0	12	497
10/21/98	40	0	40	537
10/22/98	1	3	4	541
10/26/98	29	5	34	575
10/27/98	13	0	13	588
10/28/98	20	0	20	608
10/29/98	0	5	5	613
10/30/98	1	3	4	617
11/2/98	16	0	16	633
11/4/98	6	1	7	640
11/6/98	0	2	2	642
11/9/98	5	0	5	647
11/10/98	0	1	1	648
11/11/98	4	0	4	652
11/12/98	4	0	4	656
11/13/98	0	1	1	657
11/16/98	2	0	2	659
11/18/98	1	0	1	660
11/19/98	2	0	2	662
11/20/98	1	0	1	663

Telephone Reminders Nov. 30 – Dec. 4

11/30/98	1	3	4	667

Third Mail-Out

Date	Print Surveys	Electronic Surveys	Daily Total	Cumulative Total
12/1/98	0	8	8	675
12/2/98	0	6	6	681
12/3/98	0	14	14	695
12/4/98	0	8	8	703
12/7/98	0	8	8	711
12/8/98	0	5	5	716
12/9/98	7	5	12	728
12/10/98	5	5	10	738
12/11/98	0	1	1	739
12/14/98	1	2	3	742
12/15/98	9	2	11	753
12/16/98	5	0	5	758
12/17/98	7	1	8	766
12/18/98	4	0	4	770
12/21/98	4	0	4	774

12/22/98	2	1	3	777
12/26/98	0	1	1	778
12/30/98	0	1	1	779
1/4/99	6	2	8	787
1/5/99	0	2	2	789

During the initial two weeks of data collection, the electronic submissions outnumbered the mailed submissions 2:1. After this initial period, the mailed responses increased resulting in the ratio of 37:63 of electronic to mailed responses by October 12, 1998. Due to an oversight, a distinctive information sheet on accessing the electronic version of the survey instrument was not included in the second mail-out, yet some school officials noted the URL for the electronic version in the directions of the mark sense instrument and submitted the completed survey electronically. At the close of data collection a total of 789 surveys were submitted from 75.6 % of the school districts in Texas. Thirty-six percent of the responses were submitted electronically and the remainder were mailed for machine scoring at Texas A&M University in the Office of Tests and Measurement.

Data Analysis

Data received through electronic submissions were verified with respect to the district name and/or district-county identification number. These data were then organized into ExCEL files. As completed mail-in surveys were received; they were verified with respect to district name and identification number and checked with respect to readability by the machine scoring equipment. Batches of 40-50 mailed surveys were delivered to Tests and Measurements Services for processing at a time. Resulting electronic data files from this process were then concatenated with the electronically submitted data for processing with the *Web Survey Builder*. As noted earlier, this software enables data to be partitioned and analyzed with respect to different geographic and school size classifications enabling customized reports for each reader. Simple cumulative summaries (frequencies and percentages) are provided by this software, but additional statistical analysis using the SPSS statistical package were conducted.

Findings

The following data summaries have been compiled to address the four research questions posed in the research application to the Center for the Study and Implementation of Collaborative Learning Communities.

Question 1. What changes have occurred in Texas school districts between 1996 and 1998 with respect to:

- **Technology infrastructure financial support?**

Similar questions were posed across surveys about expenditures targeted for technology. The following question from the '98 survey captures the essence of the items posed. *"During the ... school year, what amount (in dollars) of your total annual expenditures (including capital outlay) was dedicated to acquiring and maintaining telecommunications and computer infrastructure?"*

The following table illustrates the change across this period

Table 1 Financial Support for Technology Infrastructure Reported by ISDs

Amount	1996*	1998*
Less than $250,000	553	497
Between $250,000 and $500,000	80	118
Between $500,000 and $1,000,000	13	43
Between $1,000,000 and $10,000,000	64	76
Above $10,000,000		11
Total	710	745

* number of ISDs reporting

The trend across this three year period has been toward greater expenditures for technology infrastructure by school districts across Texas. The source of funds was not asked in these questions, but it is reasonable that state and federal funds that have augmented local funds have influenced the trend to greater expenditures by the schools.

- **Staff development related to technology?**

Although the two surveys did ask a number of questions about staff development related to technology (i.e., 5 items on '96 survey and 8 items on '98 survey), the items were sufficiently different permitting just two comparisons. The technology topic of staff development and the number of sessions provided by the districts each year did offer bases for comparison across time. Table 2 provides a summary of district responses to these two variables. Across the three years covered by these surveys the emphasis placed on professional staff development in schools across Texas has increased dramatically. The two ends of the continuum, (i.e., more that 10 sessions and no sessions offered) reflect the shift toward greater emphasis on technology training to

professional staff across the schools. Almost a four-fold increase of districts offering more than ten technology oriented staff development sessions and a corresponding five fold decrease in districts reporting no technology staff development signals a change in the view of technology applications in classrooms. Yet 67.4% or 524 respondents to the '98 survey indicated the level of technology staff development currently provided by their districts were not sufficient to the meet the needs of the professional staff. Funding and availability of additional in-service days were cited as the main constraints in providing sufficient technology training.

Under "Topics Provided" it appears that districts are placing much emphasis on Internet applications and linking computer applications to the subject matter presented in classrooms for their professional development experiences. Information on staff development topics were not sought on the 96 survey, thus no entries appear in Table 2. Under "Assistance Needs of ISDs" the areas of technology grant preparation and integration of technology into the curriculum were considered to be high need areas for additional professional development across the years covered by these surveys. In fact, all topics listed appear to continue to be areas for technology staff development among professional staff of the school districts.

Table 2 Staff Development on Technology Reported by ISDs

	1996	1998
Number of Sessions		
	%	%
More than 10	8.6	29.7
7 to 10	2.6	18.6
3 to 6	20.2	31
1 to 2	48.8	17.4
No sessions	19.6	3.5
Total Responses	847	781
Topics Provided		
	%	%
In-depth software skills		63.6
Content-focused applications		68.7
Web-page construction		26.9
Internet applications		88.1
Hardware applications		31.1
Distance Learning applications		17.2
Technology planning		26.2
Ethical and legal use		60
Total Responses		750
Assistance Needs of ISDs		
Grant procurement	68.4	75.7
Conducting technology audits	43.8	45.7
Forming a technology consortium	48.2	43.6

Developing a technology use plan	55.8	45.8
Staff Dev. on technology integration	73.4	88.7
Total Responses	847	727

The '98 survey sought information on the providers of technology staff development experiences. The most cited staff development providers were identified by the participating districts as district staff (89.8%) and Educational Service Center staff (86.3%). Trade association staff (5.2%) and higher education personnel (12.5%) were cited far less frequently as resources for technology training to schools districts.

- **Current technology infrastructure?**

Internet Accesses by campuses and classrooms were addressed on both surveys and are summarized in Table 3. Access increased dramatically at the campus level , illustrated by high percentages of campuses with "No Internet Access" in 1996, while the percentage of campuses having "75% or More" Internet Access in 1998 had increased substantially. Comparing campus with classroom Internet Access suggest that Internet Access is provided in administrative and/or non-instructional locations in many campuses, yet as the 1998 values reveal, an increasing number of connections are being provided in classrooms.

Table 3 Technology Infrastructure

Number of Campuses with Internet Access

	Number of ISDs reporting	No Access	Less than 25%	25% to 50%	50% to 75%	75% or More
Elementary						
1996	841	71.70%	1.90%	2.30%	0.70%	23.40%
1998	582		16%	2.70%	7.20%	74.10%
Middle School						
1996	841	75.60%	5.40%	7.10%	0.50%	11.40%
1998	507		10.80%	1.40%	9.90%	77.90%
High School						
1996	841	62.90%	9.20%	7.80%	0.20%	19.90%
1998	576		4.50%	4.50%	18.80%	72.20%
One-campus ISD			Yes	No		
1998	189		95.80%	4.20%		

Number of Classrooms with Internet Access

	Number of ISDs reporting	No Access	Less than 25%	25% to 50%	50% to 75%	75% or More
Elementary						
1996	841	85%	1.50%	1.50%	0.20%	11.70%
1998	580		43.10%	4.10%	2.60%	48.80%
Middle School						
1996	841	85.40%	2.50%	1.90%	0.60%	9.60%
1998	517		30.80%	4.30%	2.70%	52.80%
High School						
1996	841	74.30%	2.60%	3.20%	1.30%	18.50%
1998	567		23.50%	5.50%	2.80%	64.80%

Number of Classrooms with LANs

	Number of ISDs reporting	No Access	Less than 25%	25% to 50%	50% to 75%	75% or More
Elementary						
1996	841	70.70%	13%	2.10%	1.80%	12.40%
1998	568		18.80%	3.20%	6.50%	71.50%
with Internet 98	558		32.60%	3.60%	4.70%	59.20%
Middle School						
1996	841	77.20%	11.40%	1.70%	1%	8.80%
1998	497		15.10%	1.20%	9.10%	74.60%
with Internet 98	494		24.50%	2.40%	8.70%	64.30%
High School						
1996	841	71.20%	16.20%	2%	1.30%	9.40%
1998	562		8.20%	4.10%	19%	68.70%
with Internet 98	561		14.10%	3.90%	16.20%	65.80%
One-campus ISD			Yes	No		
1998	201		82.10%	17.90%		
with Internet 98	198		79.80%	20.20%		

The classrooms with Local Area Networks (LANs) also increased markedly across the three years. Although some campuses have LANs not connected to the Internet, the 98 results indicate this linkage is approaching 1:1 correspondence, especially in high school classrooms.

Other findings related to technology infrastructure from the 1998 survey include:

1. computer to student ratios of 1:5 and 1:10 were most cited for elementary, middle and high school classrooms (486 chip class/Power Macintosh or better computers).
2. Forty-eight (48) districts reported using wireless technology for their LANs
3. Seventy (70) districts reported using wireless technology for their Wide Area Networks.
4. The most cited telecommunications/Internet connection to school districts is T-1 with these connections exceeding modem connections by 5:1 or 204:41.
5. More than half of the districts (53.1%) report Educational Service Centers are their Internet service providers.
6. The modal value of computers per classroom is one

- **Use of technology infrastructure?**

Comparable items across the surveys included classroom use of Internet by teachers and students (Table 4) and type of Internet application used by teachers and students (Table 5).

Table 4 Use of Technology Infrastructure

Percentage of Teachers Using Internet for Classroom Instruction

	Number of ISDs reporting	Do Not Access	Less than 25%	25% to 50%	50% to 75%	75% or More
Elementary						
1996	840	70.20%	26%	3.20%	0.20%	0.40%
1998	776		21.80%	46%	15.70%	16.50%
Middle School						
1996	841	67.20%	28.30%	3.90%	0.30%	0.20%
1998	728		15%	46.70%	19.60%	18.70%
High School						
1996	841	56.40%	36.30%	6.20%	0.30%	0.60%
1998	736		7.30%	50.10%	21.50%	21.10%

Percentage of Students Using Internet in Classroom Instruction

	Number of ISDs reporting	Do Not Access	Less than 25%	25% to 50%	50% to 75%	75% or More
Elementary						
1996	840	80%	17.10%	2.40%	0.10%	0 40%
1998	776		26.30%	49.60%	13.70%	10.40%

Middle School						
1996	841	77.50%	18.40%	3.10%	0.30%	0.60%
1998	727		17.70%	47.50%	19.70%	15.10%
High School						
1996	839	63.10%	30.10%	5.40%	0.40%	0.90%
1998	734		9.30%	47.40%	23.80%	19.50%

The increasing use of the Internet for instruction is very evident across the type of school (elementary, middle or high school) with more applications occurring at higher grade levels. Similar patterns of increased use are evident when teacher and student frequency of Internet use are examined. It appears that the shift from roughly 60% of the teachers and 70% of the students with no access to the Internet for instructional applications jumped to at least 25% of the teachers and their students using the Internet for instruction across this three year period.

Table 5 Internet Applications by Teachers and Students

	1996	1998
Teacher Applications of Internet		
Number of ISDs Reporting	841	733
E-mail/ on-line forums	24.60%	81.60%
Accessing web-based curricula	10.40%	76.10%
Exploring (web-browsing)	23.40%	89.90%
Research for professional development	22%	42.00%
Providing curricula by web-site	14.80%	28.60%
Developing new curricula	5%	
Uploading/downloading data		45.80%
Collaborative learning - multiple sites		21%
Student Applications of Internet		
Number of ISDs Reporting	841	727
E-mail/ on-line forums	12.50%	30.50%
Accessing web-based curricula	3%	46.50%
Exploring (web-browsing)	28.80%	84.30%
Research for class assignments	34%	76.60%
As part of course work	22.10%	
Uploading/downloading data		37%
Collaborative learning - multiple sites		16.80%

Comparing the kinds of Internet applications by teachers and their students across the past three years reveal increased use in every category that listed the application on both surveys. The general listing "as part of course work" was not listed as a response option on the '98 survey and "uploading/downloading data' and "collaborative learning – multiple sites" were not among response options on the '96 survey. Teacher applications most cited were e-mail/on-line forums and exploring (web-browsing). Students appear to be using the Internet in class most frequently for exploring (web-browsing) and conducting research (literature reviews) for class assignments. As the Internet becomes available in classrooms and teachers become comfortable in providing this resource,

accessing curricula, uploading/downloading data and collaborative learning projects will likely become more frequent applications by teachers and students alike.

The frequency of classroom use of the Internet was included on the '98 survey but not on the '96 survey. Of the districts who report their teachers use the Internet for class applications nearly 7% (53) were reported to use it each day in their classes and over 34% (260) use the Internet several times a week in their classrooms for instruction. On the other end of the continuum, 14.7% (112) of the districts reported their teachers used the Internet only once each month or less and 6.7% (51) of the districts reported their teachers did not have access to the Internet in classrooms.

Question 2. What Type of professional development on technology is being provided across the Educational Service Centers (ESC) regions for teachers and technology coordinators?

Table 6 provides data that show the most cited staff development topics in technology for teachers across the ESCs were Internet Applications (web-access, E-mail, document transfer), Content-focused technology applications and In-depth software skills development. Conversely, Grant Procurement, Technology Planning and Distance Learning Applications were topics least taped for staff development sessions for teachers.

Table 6 Types of Teacher Technology Staff Development by ESC Region

ESC Region	Total ISDs Responding	Software Skill Dev.	Content App.	Web-page Dev.	Internet App.	Hardware App.	Distance Learning Applications	Technology Planning	Grant Procurement	Legal & Ethical Uses
1	28	57%	75%	32%	93%	39%	39%	29%	7%	46%
2	27	70%	59%	19%	63%	19%	7%	26%	11%	48%
3	29	45%	59%	17%	72%	31%	10%	28%	14%	41%
4	41	71%	83%	44%	93%	29%	10%	34%	17%	63%
5	20	65%	70%	30%	90%	20%	15%	20%	15%	75%
6	40	73%	73%	25%	83%	30%	20%	30%	15%	68%
7	70	61%	66%	16%	91%	34%	6%	20%	3%	67%
8	35	40%	57%	17%	83%	20%	11%	23%	0%	49%
9	31	58%	71%	23%	94%	32%	10%	23%	3%	52%
10	57	74%	81%	26%	95%	28%	18%	26%	11%	67%
11	54	65%	67%	32%	76%	43%	13%	28%	15%	65%
12	55	62%	67%	22%	96%	38%	27%	35%	15%	58%
13	43	67%	74%	35%	88%	42%	9%	33%	5%	72%
14	33	61%	79%	27%	97%	15%	18%	27%	9%	76%
15	34	59%	38%	6%	85%	24%	12%	12%	3%	50%
16	49	67%	59%	45%	90%	20%	27%	20%	8%	59%
17	42	62%	67%	31%	91%	41%	19%	26%	14%	60%
18	23	61%	74%	17%	91%	26%	39%	26%	9%	52%
19	5	80%	80%	40%	100%	40%	20%	40%	40%	80%
20	33	79%	82%	42%	91%	39%	30%	30%	9%	49%
TOTAL	749									
MAX VALUE		80%	83%	45%	100%	43%	39%	40%	40%	80%
MIN VALUE		40%	38%	6%	63%	15%	6%	12%	0%	41%

Table 7 provides a similar summary for professional development in technology for technology coordinators. Similar topics appear for technology coordinators with the addition of Grant Procurement and Technology Planning. Writing technology grant applications and developing technology plans for the school and district appear to be tasks assigned to coordinators rather than classroom teachers.

Table 7 Types of Technology Staff Development for Technology Coordinators by ESC Region

ESC Region	Total ISDs Responding	Software Skill Dev.	Content App.	Web-page Development	Internet Applications	Hardware App.	Distance Learning Applications	Technology Planning	Grant Procurement	Legal & Ethical Uses
1	27	52%	59%	33%	74%	59%	56%	78%	56%	52%
2	25	36%	56%	36%	68%	60%	28%	64%	56%	56%
3	27	56%	63%	19%	67%	59%	19%	52%	26%	44%
4	40	83%	80%	63%	90%	70%	30%	65%	38%	70%
5	20	65%	75%	60%	80%	75%	50%	85%	55%	70%
6	31	71%	58%	42%	81%	74%	29%	68%	36%	74%
7	64	73%	75%	45%	88%	72%	28%	78%	55%	77%
8	34	56%	65%	53%	82%	77%	21%	65%	24%	56%
9	27	56%	59%	63%	85%	82%	41%	56%	48%	56%
10	51	86%	78%	65%	98%	73%	35%	69%	43%	71%
11	50	78%	68%	52%	80%	66%	44%	80%	44%	68%
12	52	71%	75%	56%	94%	79%	50%	64%	39%	67%
13	39	72%	69%	56%	82%	74%	36%	72%	46%	77%
14	31	71%	68%	58%	90%	65%	42%	74%	45%	84%
15	32	63%	56%	34%	75%	75%	28%	72%	41%	63%
16	44	77%	64%	73%	91%	84%	43%	66%	48%	75%
17	41	71%	73%	61%	90%	76%	46%	66%	51%	76%
18	22	73%	91%	55%	96%	82%	59%	59%	32%	73%
19	5	60%	40%	60%	80%	40%	40%	40%	100%	80%
20	28	68%	79%	61%	82%	75%	54%	68%	57%	68%
Total	690									
MAX VALUE		86%	91%	73%	98%	84%	59%	85%	100%	84%
MIN VALUE		36%	40%	19%	67%	40%	19%	40%	24%	44%

Question 3. What is the current status of telecommunications connectivity to school districts by ESC Region?

Three items from the '98 survey provided information to respond to this question. Information on the bandwidth of connections to school districts is presented in Table 8. The most cited connectivity is T-1 lines across all 20 ESC Regions. ISDN and DS3 connectivity appear to be about equally available across the state. An increasing number of the 495 school districts responding to this item (55% to 100% per ESC Region) have sufficient connectivity to provide two-way video, two-way audio for distance learning experiences to students and professional development activities for the district's professional staff.

Table 8: District Bandwidth Connectivity and Supplier by ESC Region

ESC Region	Total ISDs Responding	DS-3	T-1	ISDN	Modem	Other
1	22	2	8	5	5	2
2	36	7	9	7	7	6
3	4	0	4	0	0	0
4	31	2	16	4	6	3
5	10	2	2	2	2	2
6	10	1	6	1	1	1
7	46	8	18	7	7	6
8	7	0	7	0	0	0
9	20	2	7	2	4	5
10	22	2	14	2	2	2
11	30	2	14	3	6	5
12	52	8	20	7	9	8
13	42	5	15	6	10	6
14	13	1	9	1	1	1
15	30	3	15	3	5	4
16	37	4	19	4	5	5
17	34	4	14	4	6	6
18	6	1	5	0	0	0
19	9	1	3	1	2	2
20	34	5	11	5	8	5
Maximum		8	20	7	10	8
Minimum		0	2	0	0	0

The second item requested information on the Internet provider for the district. This information is presented in Table 9. The most cited provider is the ESC. In eleven regions, 50% or more of the districts report accessing the Internet through services provided by the ESC. Commercial sources were cited as an important source of telecommunication connectivity among districts in six ESC Regions. However, across nine ESC regions, between 1-11% of the districts report having no Internet service to their district.

Table 9: District Internet Provider by ESC

ESC Region	Total ISDs Responding	ESC	GSC	THENet	Other H.Ed Provider	Commercial	No Internet Service
1	24	50%	0%	25%	13%	13%	0%
2	27	56%	0%	4%	0%	30%	11%
3	28	36%	7%	14%	0%	39%	4%
4	40	60%	0%	30%	3%	8%	0%
5	20	75%	15%	5%	0%	5%	0%
6	41	32%	7%	5%	17%	39%	0%
7	70	49%	3%	6%	10%	31%	1%
8	32	72%	0%	3%	3%	22%	0%
9	30	73%	0%	3%	3%	20%	0%
10	56	80%	2%	9%	4%	5%	0%
11	51	63%	6%	6%	0%	26%	0%
12	53	30%	4%	28%	17%	19%	2%
13	44	52%	11%	16%	5%	11%	5%
14	29	21%	55%	3%	10%	7%	3%
15	34	62%	6%	0%	0%	29%	3%
16	48	48%	27%	6%	8%	10%	0%
17	41	37%	7%	2%	2%	46%	5%
18	21	100%	0%	0%	0%	0%	0%
19	5	0%	40%	0%	0%	60%	0%
20	36	47%	8%	11%	8%	22%	3%

Finally, the application of wireless technology for Local Area Networks (LANs) and Wide Area Networks (WANs) was sought. School districts in ESC Regions 1, 6 and 13 report between 10 and 22% using wireless technology to link their networks in some fashion. No districts in ESC Regions 5 and 19 reported using wireless technology for their networks.

Table 10: Use of Wireless Technology for LANs and WANs by ESC

ESC Region	Total ISDs Responding	Wireless Technology LANS	Wireless Technology WANS
1	28	11%	22%
2	31	3%	7%
3	31	3%	0%
4	41	7%	7%
5	21	0%	0%

6	42	10%	12%
7	72	4%	3%
8	35	6%	11%
9	32	9%	9%
10	57	9%	14%
11	55	2%	11%
12	56	5%	14%
13	45	16%	16%
14	33	3%	6%
15	34	3%	6%
16	48	2%	6%
17	46	9%	9%
18	23	4%	4%
19	5	0%	0%
20	37	8%	11%

Question 4. How is technology being used in school districts [classified by type and size] by teachers and students?

Examining the data organized by District Type (eight classifications ranging from Major Urban to Rural) and by District Size (nine classifications ranging from over 50,000 to under 500 enrollment) indicate a close relation between size and type. This observation is evident in comparing the values listed across Tables 11 (District Type) and Table 12 (District Size). While district size categorized by enrollments is self-evident, the classification of district type needs elaboration. District type is based on population density and growth rate. For this analysis, eight of the nine classifications were used. Charter Schools were not included because no charter schools were among the responses. The district types listed in Table 11 are defined as follows:

Major Urban – The largest school districts in the state that serve the six metropolitan areas of Houston, Dallas, San Antonio, Fort Worth, Austin and El Paso.

Major Suburban – School districts in and around the major urban areas.

Other Central City – Major school districts that are not contiguous to a major urban district but with county populations between 100K and 650K.

Other Central City Suburban – Other school districts in and round the other large, but not major, Texas cities.

Independent Town – District is located in a county with a population of 25,000 to 100,000.

Non-Metro: Fast Growing – School districts that have at least 300 students enrolled and have exhibited a growth rate of 20% or more over the last five years.

Non-Metro: Stable – School districts with stable enrollments exceeding state median value.

Rural – Districts with a modest growth rate and enrollments less than 300.

Table 11: Teacher and Student Internet Applications by District Type

Type of School District	Major Urban	Major Suburban	Central City	Central City Suburban	Independent Town	Non-Metro: Fast Growing	Non-Metro: Stable	Rural
Teacher Applications of Internet								
Number of ISDs Reporting	6	47	20	59	54	67	173	305
E-mail/ on-line forums	83%	81%	95%	76%	74%	81%	79%	85%
Accessing web-based curricula	67%	81%	100%	76%	83%	73%	72%	75%
Exploring (web-browsing)	100%	94%	85%	88%	94%	87%	90%	90%
Uploading/downloading data	17%	43%	55%	46%	57%	46%	40%	48%
Providing curricula by web-site	33%	30%	40%	37%	35%	27%	23%	29%
Collaborative learning multiple sites	50%	28%	40%	22%	28%	18%	15%	21%
Research for professional development	33%	62%	75%	54%	41%	33%	39%	38%
Student Applications of Internet								
E-mail/ on-line forums	0%	21%	47%	25%	30%	29%	26%	35%
Accessing web-based curricula	50%	57%	63%	55%	54%	49%	36%	47%
Exploring (web-browsing)	83%	81%	79%	77%	85%	88%	84%	86%
Uploading/downloading data	33%	34%	32%	25%	54%	38%	29%	41%
Developing web-sites	17%	30%	42%	36%	24%	24%	20%	20%
Collaborative learning multiple sites	17%	30%	32%	18%	17%	15%	12%	17%
Research for class assignments	50%	79%	100%	77%	72%	79%	74%	77%
Number of ISDs Reporting	6	47	19	56	54	68	172	303

The type of district did not appear to influence the type of Internet application accessed by teachers. Web-browsing and e-mail appear to be among the most used applications by teachers across all school types. The application, "collaborative learning multiple sites" appears to be applied less by teachers, except for those teachers working in major urban schools.

Student Internet applications correspond to teacher applications, except the reported applications usually are lower but markedly so for e-mail/on-line forums. These data suggest that major urban districts have a rule forbidding e-mail use in schools by students. Across all district types, "research for class assignments" by students is cited as

an application more frequently than "research for professional development" values reported for teachers.

Table 12: Teacher and Student Internet Applications by District Size

Size of School District	Over 50K	25 to 50K	10 to 25K	5 to 10K	3 to 5K	1.6 to 3K	1 to 1.6K	500 to 999	Under 500
Teacher Applications of Internet									
Number of ISDs Reporting	7	17	31	55	48	99	89	146	239
E-mail/ on-line forums	86%	94%	77%	82%	71%	77%	79%	85%	84%
Accessing web-based curricula	57%	94%	94%	80%	88%	71%	66%	80%	74%
Exploring (web-browsing)	86%	94%	87%	91%	96%	89%	87%	92%	90%
Uploading/downloading data	14%	65%	52%	51%	44%	39%	37%	47%	49%
Providing curricula by web-site	29%	53%	36%	38%	19%	22%	29%	31%	27%
Collaborative learning multiple sites	43%	41%	36%	31%	19%	17%	11%	23%	19%
Research for professional development	29%	77%	65%	58%	50%	36%	36%	41%	37%
Student Applications of Internet									
E-mail/ on-line forums	0%	29%	37%	26%	23%	25%	28%	30%	37%
Accessing web-based curricula	57%	71%	57%	53%	65%	36%	33%	50%	45%
Exploring (web-browsing)	86%	77%	77%	78%	83%	88%	81%	90%	85%
Uploading/downloading data	43%	41%	27%	42%	27%	36%	24%	40%	42%
Developing web-sites	29%	53%	30%	33%	15%	24%	17%	29%	18%
Collaborative learning multiple sites	14%	35%	27%	26%	10%	13%	11%	17%	17%
Research for class assignments	57%	82%	100%	76%	75%	70%	74%	79%	77%
Number of ISDs Reporting	7	17	30	55	48	97	89	144	238

The Internet applications trends noted for teachers and their students by school type are evident in Table 12 (organized by district enrollment). It is encouraging that Internet applications by teachers and students do not appear to be a function of the size or location of the school district.

Discussion and Conclusions

The preceding data were presented in response to the four research questions posed for this study. The changes in the telecommunications infrastructure in the public schools across Texas has changed dramatically across the three years covered by this study. As Table 1 indicates, public school districts reported spending more for their technology infrastructure in 1998 compared to 1996. A reasonable hypothesis is that federal and state funding have affected technology infrastructure of school districts through nearly 1,000 grants awarded to Texas schools during the past three years. In large measure these awards have targeted rural, and once isolated communities. As a result, the number of classroom computers, the nature of professional development in technology, the type of connectivity to the Internet, and the classroom technology applications of teachers and students are comparable across the state's schools regardless of district size or location.

The increased expenditures have resulted in greater professional development in technology evidenced by information drawn from Table 2, *Staff Development on Technology Reported by ISDs*. Three years ago, 266 school districts reported they provided at least three staff development activities on technology during the year to their teachers. In contrast, during the past year, 619 school districts reported providing three or more technology based professional development experiences to their teachers. Topics that have received much attention across these schools are Internet applications, in-depth instruction on software applications and content-focused applications for their classrooms. These findings suggest that Texas schools are exceeding the average of 9 hours of training in technology offered by school districts to their professional staffs cited by the Education Commission of the States document (ESC, 1998). Yet in the sense of how much more is there to be accomplished, our data indicate that in 1998, some 163 school districts reported have either no staff development (27 school districts) or limited opportunities (1 or 2 sessions) for technology training.

The expenditures for technology infrastructure have had a marked effect on the number of campuses and classrooms with Internet access. In 1996, over 80% of the school districts reported no Internet access in their classrooms, while in 1998, less than 9 % of the districts reported "no Internet access." Although there are a sizeable number of classrooms that are not linked to the Internet, it is remarkable that so much connectivity has occurred in just three years. In the near future, infrastructure funding opportunities will hopefully enable virtually all of the remaining classrooms to become connected to the Internet. On a related issue, the number of computers per classroom that can operate on the Internet appears to be one. This is an area of need for future technology grants that funding sources hopefully will address.

With so much progress in connecting school classrooms to the Internet, how are teachers and students using the information highway? First, in 1998 between 10 and 20 percent of the districts report that more than 75% of their students access the Internet in class. This observation suggests that both teachers and their students are in the initial stages of employing this technology at the instructional level. Second, for these early adopters,

accessing e-mail and web-browsing are the most common applications reported for teachers, while web-browsing and research for class assignments are the most common student applications. As the availability of workstations per classroom increase, the nature of the applications may change for both teachers and their students.

Findings associated with the type of professional development being provided across the Educational Service Center Regions for teachers and technology coordinators were remarkably consistent. Across the ESCs, Internet applications and In-depth software skills development were the most cited topics for professional development for teachers. The most cited topics identified for technology coordinators appeared to be more inclusive, including emphasis on hardware applications, technology planning and grant procurement. This information coupled with the observation that ESC staff are the most common provider of technology staff development suggest a well developed network across the 20 ESCs with respect to the nature of offerings for technology staff development.

In terms of telecommunications connectivity reported by school districts, two findings were particularly interesting to us. First, the most cited connectivity to school districts is T-1 lines across the 20 ESCs. And second, in most cases, the ESC is the Internet provider. The survey items addressing connectivity were NOT addressed by 37% of the districts, suggesting that either a change is "in the works" or information was not available. The bandwidth being accessed by school districts responding to these items is quite varied, but with the districts being so different in terms of student enrollment these differences are expected, especially if classroom applications of the Internet are planned. It is also interesting that wireless technology is being experimented with across the state.

The final research question sought information about technology applications across school districts of different size and type. Because the type of school was closely correlated to the size of school, Tables 11 (District Type) and 12 (District Size) presented very similar information. Further, this information was not too different from aggregating all of the data into a single classification. One inference from the uniformity of findings is that because the computers/classroom with access to the Internet is so limited little can be determined by partitioning the data by school type, school location or school size. This finding also suggests that future grant applications addressing technology infrastructure may well consider the workstations/classroom with Internet connectivity as a funding requirement.

In conclusion, substantial technology infrastructure changes have occurred in Texas public schools over the past three years. The extent and breadth of these changes speaks volumes about how state and federal funding to local schools are impacting schools. Although the journey is far from complete, and much progress has occurred, it is hoped that funding opportunities to all school districts will continue, enabling technology integration into the classrooms to continue at the same rate that we observed during the past three years.

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Appendix A

6-11-98 BCS

South Central Regional Technology in Education Consortium-Texas (SCR*TEC-Tx)
and
Texas Association for School Administrators (TASA)

Levels and Use of Technology in Texas Public Schools 1998 Survey

MARKING INSTRUCTIONS

- Use number 2 pencil only.
- Make dark marks that fill the oval completely.
- Erase cleanly any mark you wish to change.
- Make no stray marks.

SCHOOL DISTRICT

COUNTY-DISTRICT NUMBER

ADDRESS

CITY

STATE **ZIP CODE**

Please use the enclosed envelope to return this survey

Texas A&M University

College of Education

College Station, TX 77843-4222

Attn: Jon Denton

Mark Reflex by NCS MM221049-1 654321 ED99 Printed in U.S.A. Copyright © 1998 National Computer Systems, Inc. All rights reserved.

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General Instructions

Thank you for taking time to complete this survey. The instrument is divided into five sections and can probably be most readily answered by a district coordinator with input from other staff. While different answers may be appropriate for individual campuses across the school district, please respond to the items with the average of the district in mind. An electronic version of this instrument is available at <coe.tamu.edu/techsurvey> that can be responded to directly on-line. Please consider this option if you have web access.

- "Please list..." questions should be answered with a number.
- "Please indicate..." questions should be answered by filling in an oval next to the appropriate response or responses as indicated
- Questions with the phrase "mark all that apply," should be answered by filling in an oval next to the appropriate response or responses as indicated.
- $ _____ questions should be answered with a dollar amount.

Special Definitions

Middle School is defined as including "junior high schools."

Consortium is defined as a local, regional, or statewide collection of entities who have teamed to create or use a computer and/or telecommunications network.

Internet is defined as the true multimedia form of the medium (graphics, hyperlinks, sound) available on a computer via a direct telecommunications connection.

Local Area Network (LAN) is a system linking multiple computers and peripheral equipment, such as printers, among various locations on one campus.

Wide Area Network (WAN) is a system linking LANS together to form a district-wide telecommunications system.

Help

If you have questions about this survey, please call Richard Powell at TASA, 512-477-6361

PLEASE COMPLETE AND RETURN THIS SURVEY USING THE ENVELOPE PROVIDED OR SUBMITTING DIRECTLY ON-LINE

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Policy Questions About Technology Integration

Please Indicate Your Opinion

1. Has your district received a meaningful level of the benefits intended for schools under HB 2128 (e.g. fixed-or discount-rate pricing, broadband services, T-1 installation, toll-free Internet access, etc.)?

   ○ Yes ○ No

2. My district is interested in pursuing alternative electronic methods for delivering textbook content to schools and students (such as, laptop computers, electronic textbooks, etc.)?

   ○ Yes ○ No

3. Low- or no-cost methods of providing Internet access and computers to individual educators should be a state priority?

   ○ Yes ○ No

4. Has your district applied for an E-Rate (federal) telecommunications rebate?

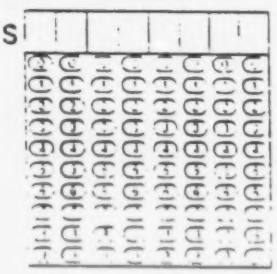
   ○ Yes ○ No

5. If the following technology assistance efforts were available from a vendor-neutral source, would your district be interested? (Mark all that apply)

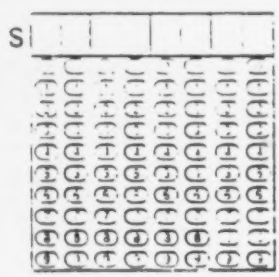
   - ○ Conducting a district/school technology audit
   - ○ Developing a district/school technology use plan
   - ○ Developing a technology infrastructure plan and cost estimate
   - ○ Establishing a technology consortium
   - ○ Participating in staff development on technology integration in classrooms
   - ○ Participating in workshops to develop grant applications for technology support

Questions About Your District's Technology Support

6. During the 1997-98 school year, what amount (in dollars) of your total annual expenditures (including capital outlay) was dedicated to acquiring and maintaining telecommunications and computer infrastructure? Include salary costs, licensing fees, recurring costs, new purchases of hardware and software, training program costs, retrofitting costs, etc.



7. During the 1997-98 school year, what amount (in dollars) of your total annual expenditures was dedicated to staff development directly related to technology? Include costs of in-district and out-of-district (vendor) training, supplies and materials costs, salary costs for replacement staff (substitutes), etc.



8. Is your district currently part of a computer/ telecommunications consortium?

   ○ Yes ○ No

9. If yes to item 8, who are the partners in this consortium with you? (Mark all that apply)

   - ○ Regional Educational Service Center
   - ○ University/College
   - ○ Community College
   - ○ Utility Company
   - ○ Corporation
   - ○ Local Government
   - ○ Community Library
   - ○ Hospital
   - ○ Other School Districts

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PLEASE DO NOT WRITE IN THIS AREA

10. Please list the number of Full Time Equivalent staff (FTEs) dedicated to providing technical support for your technology/computer operations.

FTEs for Elementary campuses	FTEs for Middle School campuses	FTEs for High School campuses	FTEs that are dedicated primarily to central-office service	FTEs for Other ISD service	FTEs for one-campus ISDs

Questions About Your District's Current Technology Infrasturcture

Note: In estimating the number of computers, please consider only 486 chip class/Power Macintos computers or better that are capable of connecting graphically to the World Wide Web (www).

11. Please indicate your average *campus* computer-to-student ratio. Note: count only 486 chip class/Power Macintosh or better computers.

A. Elementary campuses

☐ 1:1 ☐ 1:5 ☐ 1:15 ☐ Higher
☐ 1:3 ☐ 1:10 ☐ 1:25 than 1:25

B. Middle school campuses

☐ 1:1 ☐ 1:5 ☐ 1:15 ☐ Higher
☐ 1:3 ☐ 1:10 ☐ 1:25 than 1:25

C. High school campuses

☐ 1:1 ☐ 1:5 ☐ 1:15 ☐ Higher
☐ 1:3 ☐ 1:10 ☐ 1:25 than 1:25

D. One-campus ISDs

☐ 1:1 ☐ 1:5 ☐ 1:15 ☐ Higher
☐ 1:3 ☐ 1:10 ☐ 1:25 than 1:25

12. Please indicate the average number of *computers per classroom*. Note: count only 486 chip class/Power Macintosh or better computers.

A. Elementary classrooms

☐ 0 ☐ 2-5 ☐ 10 or more
☐ 1 ☐ 5-10

B. Middle school classrooms

☐ 0 ☐ 2-5 ☐ 10 or more
☐ 1 ☐ 5-10

C. High school classrooms

☐ 0 ☐ 2-5 ☐ 10 or more
☐ 1 ☐ 5-10

D. One-campus ISDs

☐ 0 ☐ 2-5 ☐ 10 or more
☐ 1 ☐ 5-10

13. Please indicate the number of your campuses that have Internet access.

Number of Elementary Campuses	Number of Middle School Campuses	Number of High School Campuses

One-Campus ISD ☐ Yes ☐ No

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14. Please indicate the number of your classrooms that have Internet access.

Number of Elementary classrooms	Number of Middle School classrooms	Number of High School classrooms

One-campus ISD classrooms ○ Yes ○ No

15. Please indicate the number of campuses with a Local Area Network (LAN).

Number of Elementary Campuses w/LAN	Number of Middle School Campuses w/LAN	Number of High School Campuses w/LAN

One-campus ISD w/LAN ○ Yes ○ No

16. Please indicate the number of Campus LANs Connected To Internet

Number of Elementary Campuses w/LAN connected to Internet	Number of Middle School Campuses w/LAN connected to Internet	Number of High School Campuses w/LAN connected to Internet

One-campus ISD w/LAN connected to Internet
○ Yes ○ No

17. Do you use wireless technology for any of your LANs?
○ Yes ○ No

18. Do you use wireless technology for a Wide Area Network (WAN)?
○ Yes ○ No

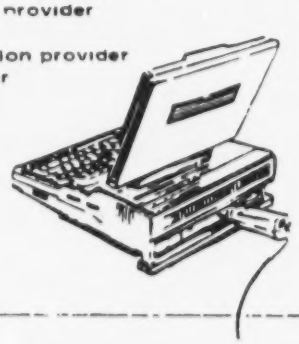
19. What is the bandwidth of your district's main telecommunications/Internet connection and how many campuses are served by this connection?

○ DS-3	○ T-1	○ ISDN
Number of Campuses served by this connection	Number of Campuses served by this connection	Number of Campuses served by this connection

○ Modem	○ Other (cable company, satellite, etc.)
Number of Campuses served by this connection	Number of Campuses served by this connection

20. Which Internet service provider is your district using?

○ Educational Service Center (ESC)
○ General Services Commission (GSC) /state agency provider
○ THEnet
○ Other higher education provider
○ Commercial provider
○ No Internet service



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Questions About Your District's Use of Technology

21. What percentage of your district's teachers regularly use the Internet *as part of classroom instruction*?

A. Elementary teachers

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

B. Middle School teachers

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

C. High School teachers

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

22. How often do these teachers use the Internet as part of classroom instruction?

○ Daily
○ Several times a week
○ Once a week
○ Several times a month
○ Once a month
○ Less than once a month
○ Internet not available

23. How is the Internet used generally by your teachers? (Mark all that apply)

☐ E-mail / on-line forums
☐ Accessing web-based curricula
☐ Exploring (web-browsing)
☐ Uploading / downloading data
☐ Providing curricula by web-site
☐ Collaborative learning projects among multiple sites
☐ Research for professional development

24. What percentage of your teachers do you estimate have access to a computer *at home*?

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

25. What percentage of your teachers do you estimate have access to the Internet *at home*?

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

26. What percentage of your district's students regularly use the Internet *as part of classroom instruction*?

A. Elementary students

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

B. Middle School students

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

C. High School students

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

27. How often do these students use the Internet as part of classroom instruction?

○ Daily
○ Several times a week
○ Once a week
○ Several times a month
○ Once a month
○ Less than once a month
○ Internet not available

28. How is the Internet used generally by your students? (Mark all that apply).

☐ E-mail/on-line forums
☐ Accessing web-based curricula
☐ Exploring (web-browsing)
☐ Uploading/downloading data
☐ Developing web-sites
☐ Collaborative learning projects among multiple sites
☐ Research for class assignments

29. What percentage of your students do you estimate have access to a computer *at home*?

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

30. What percentage of your students do you estimate have access to the Internet *at home*?

○ 0 ○ 1-25% ○ 26-50% ○ 51-75% ○ 76-100%

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Questions About Your District's Staff Development Related To Technology

31. **What type of staff development does your district provide teachers on the use of technology? (Mark all that apply)**

- ☐ In-depth software skills development
- ☐ Content-focused technology applications
- ☐ Web-page construction for instructional applications
- ☐ Internet applications (web-access, E-mail, document transfer)
- ☐ Hardware applications of computer and telecommunications devices
- ☐ Distance learning applications
- ☐ Technology planning
- ☐ Grant procurement
- ☐ Ethical and legal use of technology

32. **How many technology-related staff development sessions (minimum 1 hour each) are made available to teachers in a school year?**

- ☐ More than 10 sessions
- ☐ 6 - 10 sessions
- ☐ 3 - 5 sessions
- ☐ 1 - 2 sessions
- ☐ No technology staff development sessions provided at this time

33. **What type of staff development does your district provide technology coordinators on the use of technology? (Mark all that apply)**

- ☐ In-depth software skills development
- ☐ Content-focused technology applications
- ☐ Web-page construction for instructional applications
- ☐ Internet applications (web-access, E-mail, document transfer)
- ☐ Hardware applications of computer and telecommunications devices
- ☐ Distance learning applications
- ☐ Technology planning
- ☐ Grant procurement
- ☐ Ethical and legal use of technology

34. **How frequently is your district's technology plan revised?**

- ☐ District does not have a technology plan
- ☐ Every five (5) years
- ☐ Every two (2) years
- ☐ Every year
- ☐ Continuously or as needed

35. **Who provides technology staff development content for your district? (Mark all that apply)**

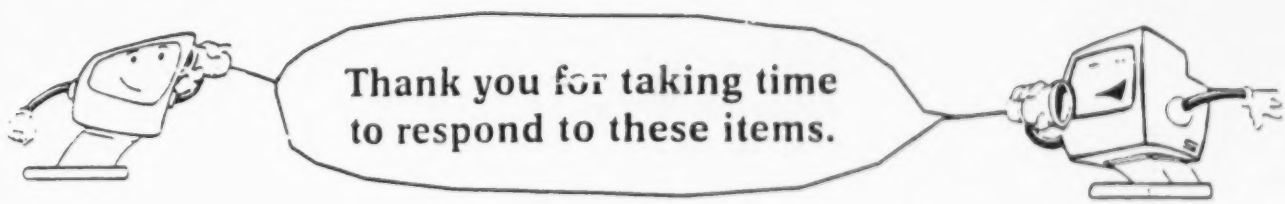
- ☐ Private vendors
- ☐ District staff
- ☐ Educational service center staff
- ☐ Trade association staff
- ☐ Higher education personnel

36. **In your opinion, is the level of technology staff development currently being provided by your district sufficient to meet the needs/demands of your workforce?**

- ☐ Yes
- ☐ No

37. **If you answered no to item 36, what constraints prevent your district from providing more technology staff development? (Mark all that apply)**

- ☐ Funding
- ☐ Time to designate more in-service days
- ☐ Lack of staff interest
- ☐ Lack of adequate providers in immediate area



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